

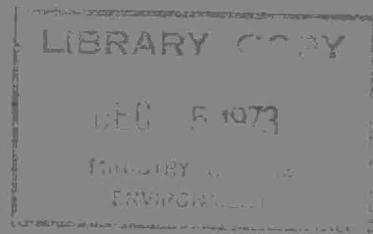
# OPERATING SUMMARY

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MOE

# FORT FRANCES

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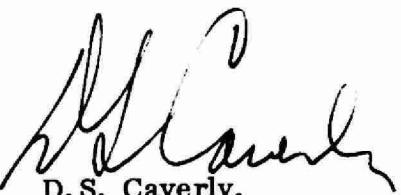
Ministry of the  
Environment

135 St. Clair Avenue West  
Toronto 195, Ontario

We are pleased to present you with the 1972 operating summary for the water pollution control plant serving your community.

This summary contains data on the performance of the plant as well as relevant financial information. Of particular interest is the review of the year's activities in which significant items of these data are discussed in some detail by the operations engineer and his staff who, by their day-to-day involvement with the operation, are thoroughly familiar with the plant.

We appreciate your continuing interest in protecting the environment through the efficient operation of this wastewater treatment facility.



D. S. Caverly,  
Assistant Deputy Minister.



D.A. McTavish, P. Eng.,  
Director,  
Project Operations Branch.



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B.W. Hansler

OPERATIONS ENGINEER  
E. Czarnecki

135 St. Clair Avenue West  
Toronto 195

**FORT FRANCES**  
**WATER POLLUTION CONTROL PLANT**

operated for  
THE TOWN OF FORT FRANCES

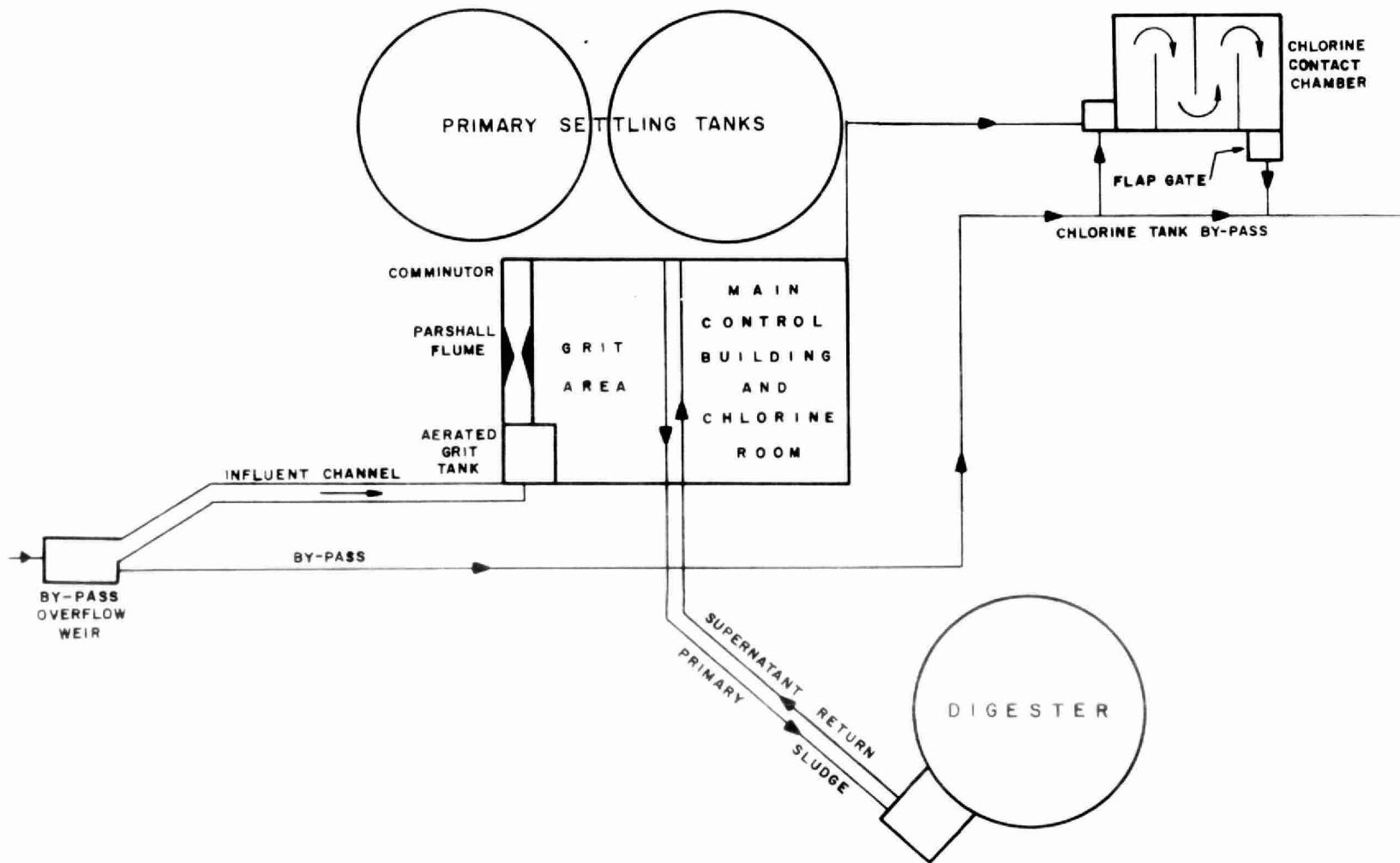
by the  
MINISTRY OF THE ENVIRONMENT

1972 ANNUAL OPERATING SUMMARY

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FORT FRANCES W P C P  
FLOW CHART



## DESIGN DATA

PROJECT NO.	2-0060-59	<u>PRIMARY TREATMENT</u>
TREATMENT	Primary	<u>Screening</u>
DESIGN FLOW	2.0 mgd	- Coarse bar screen (2")
DESIGN POPULATION	12,000	<u>Comminution</u>
BOD - Raw Sewage	130 mg/l	Type: Smith & Loveless Model 15R
- Removal	40%	<u>Grit Removal</u>
SS - Raw Sewage	180 mg/l	Type: Aerated; grit removed by
- Removal	60%	clamshell bucket
		Size: One 10' 5" x 10' 5" x 13' 9" swd
		(1515 cu ft or 9,400 gal)
		Retention: 6.8 min
		<u>Air Supply</u>
		Type: Roots-Connersville
		Size: One 100 scfm @ 9 psi
		<u>Primary Sedimentation</u>
		Type: Eimco Process
		Size: Two 40' x 40' x 10' swd
		(32,000 cu ft or 200,000 gal)
		Retention: 2.4 hours

Loading: Surface, 625 gal/ft<sup>2</sup>/day  
Weir, 9,660 gal/ft/day

### CHLORINATION

Type: W & T Model A-731  
Size: 400 lb/day

### Chlorine Contact Chamber

Size: 27' x 20' x 8.5' (avg)  
(4,590 cu ft or 28,600 gal)  
Retention: 20.6 min

### OUTFALL

- to Rainy River

### SLUDGE HANDLING

#### Digestion System

Type: Single stage with floating cover:  
gas mixed  
Size: One 40' dia x 25' swd (31,500 cu ft  
or 195,500 gal)  
Loading: 1.38 lb/cu ft/mo  
Mixer: Roots-Connersville Type XA

# '72 Review

## GENERAL

The primary treatment plant and five pumping stations are operated by the chief operator and two operators.

## EXPENDITURES

A total of \$50,094.91 was spent which represents \$76.24 per million gallons treated or 34 cents per pound of BOD removed.

## PLANT FLOWS AND CHLORINATION

A total of 657.1 million gallons was received in 1972. The average daily flow was 1.8 million gallons. The daily flow exceeded the design flow approximately 17 percent of the time. It should be noted that on a yearly basis over the past seven years, the flows have remained somewhat constant. Chlorine was applied from January to December at an average dosage of 3.3 mg/l. A total of 21,730 pounds of chlorine was used during this period.

## PLANT EFFICIENCY

The raw sewage BOD concentration averaged 75 mg/l which was reduced 31 percent to an effluent BOD concentration of 52 mg/l. The average raw suspended solids concentration was 117 mg/l which was reduced to 61 mg/l, a reduction of 48 percent. A total of 319 cubic feet of grit was removed in 1972.

## SLUDGE DIGESTION AND DISPOSAL

A total of 146,000 gallons of digested sludge was removed in 1972 and 876 cubic yards of sludge hauled. The average total solids concentration was 7.3 percent. The volatile solids was reduced from 59 to 43 percent.

### CONCLUSIONS AND RECOMMENDATIONS

Flows decreased in 1972, however sewage strength remained essentially the same. Plant efficiencies were essentially the same.

It is recommended that the municipality continue its sewer separation program. If successful it is felt that some development could be allowed without cause for expansion. However, consideration should be given to providing stand-by power at the Central Avenue pumping station.

PROJECT COSTS	NET CAPITAL COST	\$1, 894, 347. 61
	DEDUCT - Portion financed by CMHC (Final)	<u>(1, 276, 239. 07)</u>
	Long Term Debt to MOE	\$ <u>618, 108. 54</u>
	Debt Retirement Balance at Credit (Sinking Fund) December 31, 1972	\$ <u>132, 028. 52</u>
	Net Operating	\$ 50, 514. 68
	Debt Retirement	6, 383. 00
	Reserve	7, 526. 63
	Interest Charged	<u>34, 662. 88</u>
	TOTAL	\$ <u>99, 087. 19</u>
<u>RESERVE ACCOUNT</u>		
	Balance @ January 1, 1972	\$ 98, 147. 85
	Deposited by Municipality	7, 526. 63
	Interest Earned	<u>6, 483. 14</u>
		\$ 112, 157. 62
	Less Expenditures	<u>-</u>
	Balance @ December 31, 1972	\$ <u>112, 157. 62</u>

## OPERATING COSTS

PAYROLL	58 %
FUEL	4 %
POWER	10 %
CHEMICALS	10 %
GENERAL SUPPLIES	4 %
EQUIPMENT	1 %
REPAIRS & MAINTENANCE	4 %
SUNDRY	8 %
WATER	1 %
TRAVEL	<1 %

## 1972 COSTS

### TOTAL ANNUAL COST

NET OPERATING	51 %
DEBT RETIREMENT	6 %
RESERVE	8 %
INTEREST	35 %

### YEARLY OPERATING COSTS

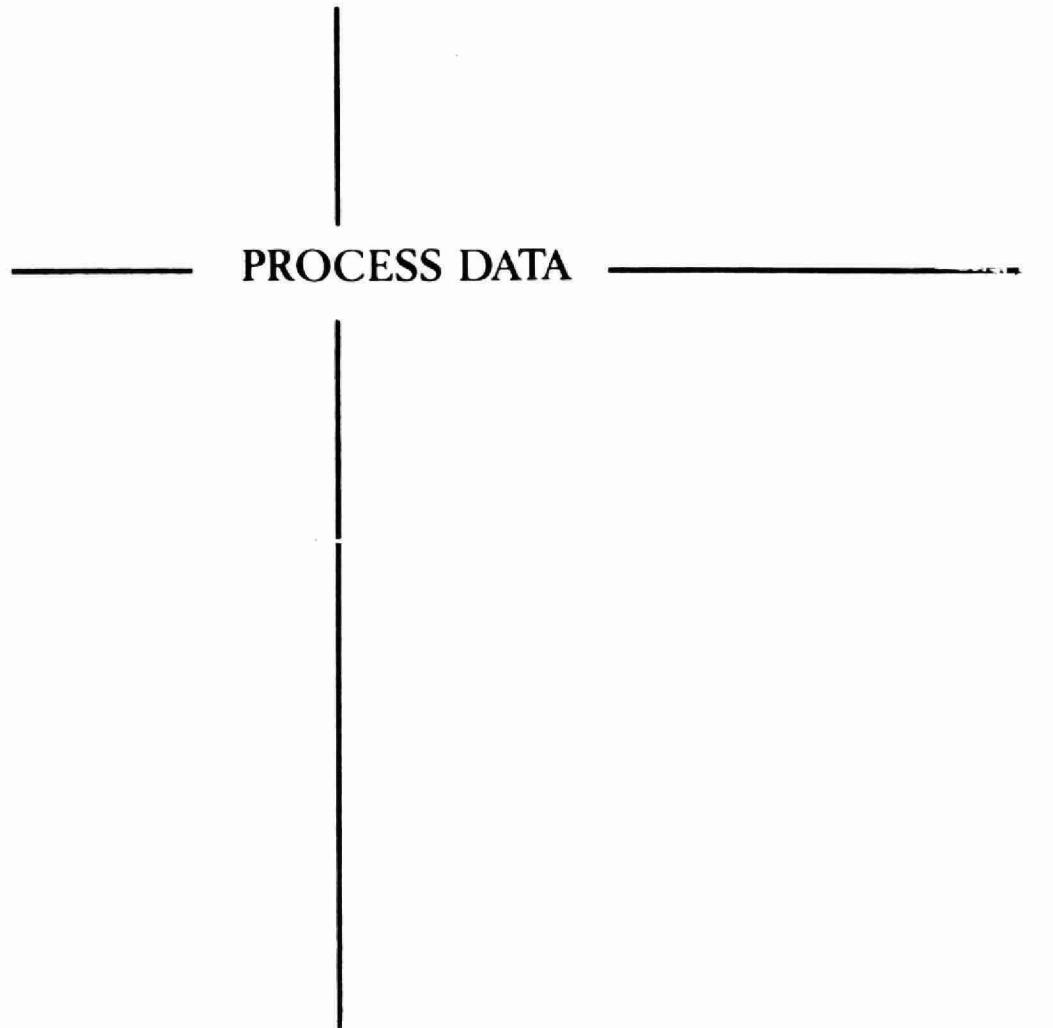
YEAR	SEWAGE TREATED in million gallons	TOTAL OPERATING COSTS	TREATMENT COSTS	
			\$ per million gal	£ per lb BOD
1968	736.200	36,705.23	39.86	11 cents
1969	692.810	38,741.52	55.92	13 cents
1970	686.4	44,640.95	65.04	14 cents
1971	714.6	51,518.62	72.10	21 cents
1972	657.1	50,094.91	76.20	34 cents

## MONTHLY OPERATING COSTS

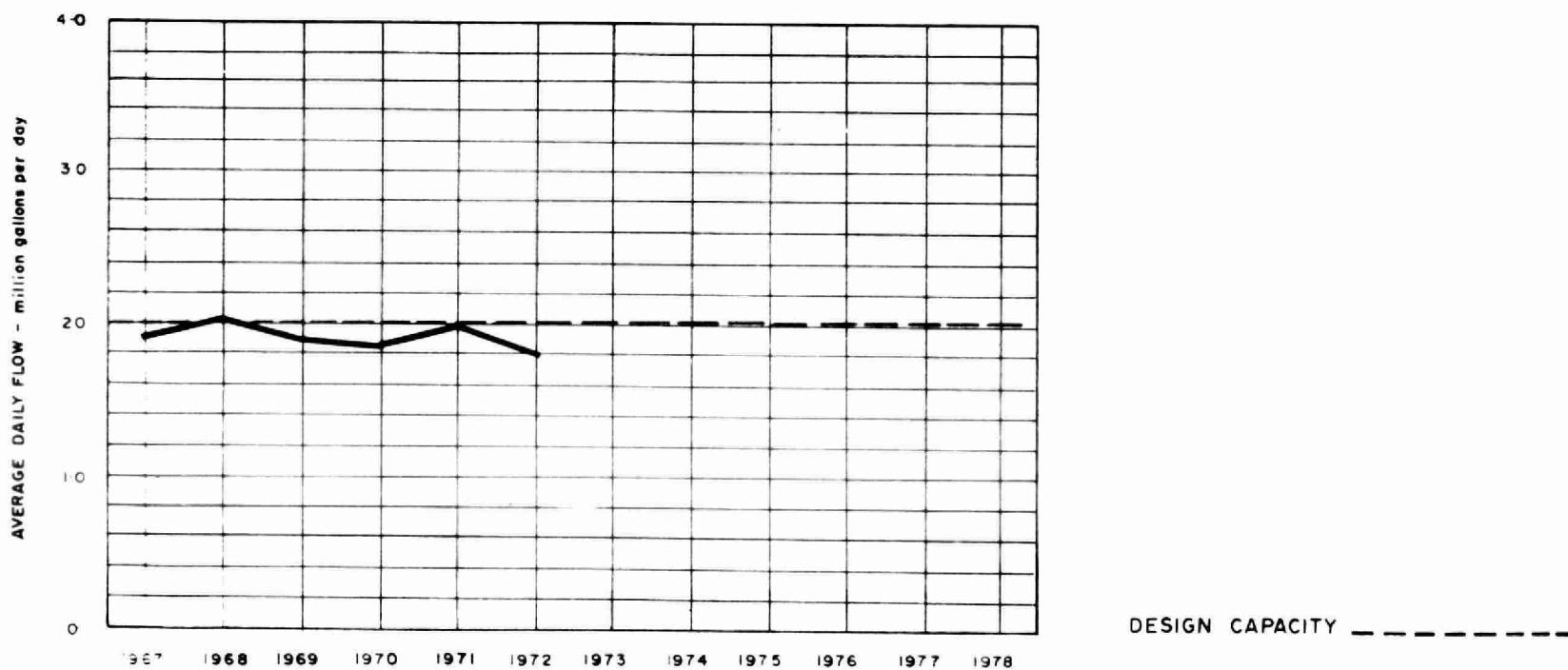
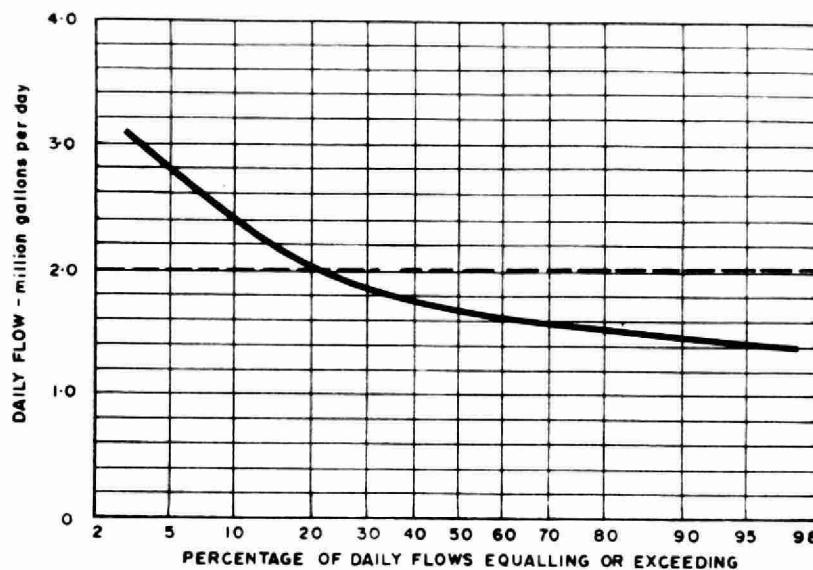
MONTH	TOTAL EXPENDITURE	REGULAR PAYROLL	CASUAL PAYROLL	FUEL	POWER	CHEMICALS	GENERAL SUPPLIES	EQUIPMENT	REPAIRS and MAINTENANCE	SUNDY*	WATER	TRAVEL
JAN	2482.02	2063.28			331.94		14.18		23.67	48.95		
FEB	3618.16	2178.85		283.50	437.39	437.63	190.76		41.74	12.29	36.00	
MAR	4330.18	2139.91		863.74	442.75				104.87	742.91	36.00	
APR	3955.29	2282.70			417.48	437.63	418.92		295.41	67.15	36.00	
MAY	4330.43	2307.85		437.35	457.81	437.63	191.52		398.36	62.83	37.08	
JUNE	4237.53	3240.56			372.27		270.97		293.44	19.49	40.80	
JULY	1495.08	57.31			398.03	447.75	173.06	28.61	125.66	223.86	40.80	
AUG	3063.03	2104.61		42.00	389.29	447.75	40.64			(2.06)	40.80	
SEPT	4617.20	2237.50			374.71	384.75	205.94	134.30	169.23	1069.97	40.80	
OCT	3639.12	2497.89			397.55	416.25	253.22		17.07	16.34	40.80	
NOV	2115.55	24.84			372.76		80.02		109.87	1452.28	40.80	34.98
DEC	12211.32	7797.87		467.21	738.24	2081.25	446.60	176.08	243.45	179.02	81.60	
<b>TOTAL</b>	<b>50094.91</b>	<b>28933.17</b>		<b>2093.80</b>	<b>5130.22</b>	<b>5090.64</b>	<b>2285.83</b>	<b>338.99</b>	<b>1822.77</b>	<b>3893.03</b>	<b>471.48</b>	<b>34.98</b>

Brackets indicate credit.

\* Sundry includes sludge haulage costs of \$2,351.50



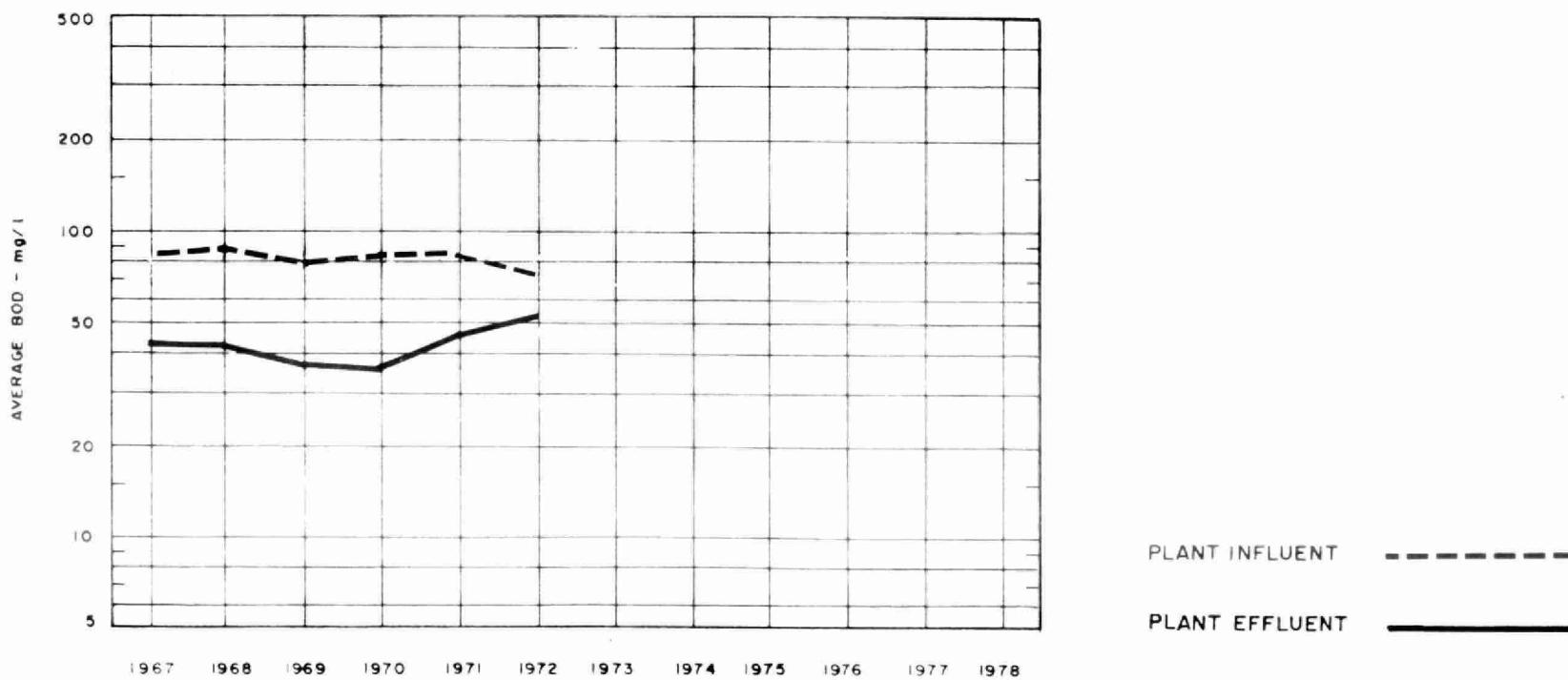
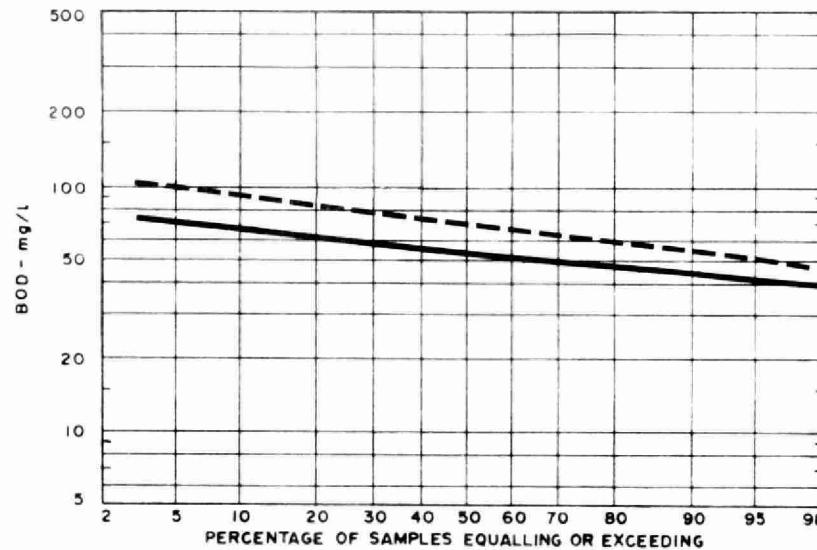
# FLOWS



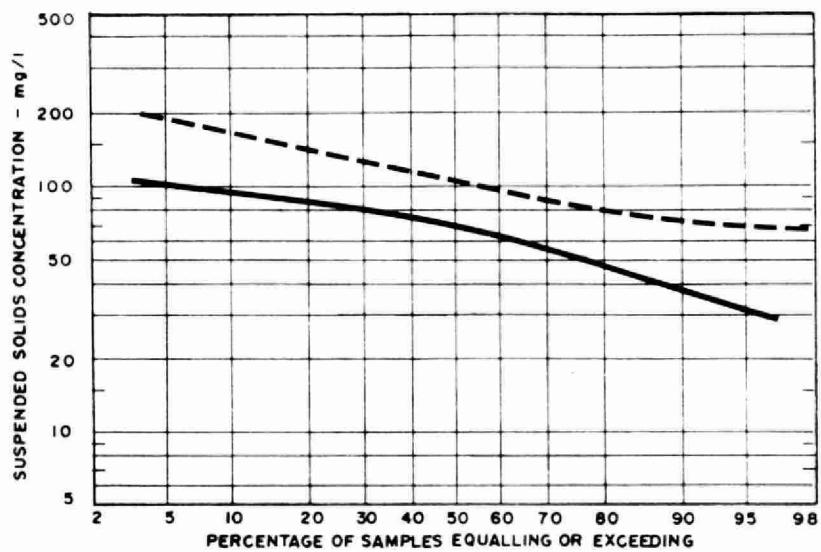
## PLANT PERFORMANCE

MONTH	FLOWS			BIOCHEMICAL OXYGEN DEMAND				SUSPENDED SOLIDS			PHOSPHORUS		
	TOTAL FLOW million gallons	AVERAGE DAY mil. gal	MAXIMUM DAY mgd	INFLUENT mg/l	EFFLUENT mg/l	REDUCTION		INFLUENT mg/l	EFFLUENT mg/l	REDUCTION		INFLUENT mg/l P	EFFLUENT mg/l P
						%	10 <sup>3</sup> pounds			%	10 <sup>3</sup> pounds		
JAN	49.7	1.60	1.7	73	47	36	12.9	90	49	46	20.4	4.7	3.6
FEB	44.7	1.54	1.7	93	71	24	9.8	106	46	57	26.8		
MAR	54.1	1.74	2.4	91	50	45	22.2	105	49	53	30.3	4.6	4.0
APR	76.2	2.54	3.3	85	51	40	25.9	120	60	50	45.7	3.6	2.7
MAY	64.2	2.07	3.4	69	51	26	11.6	95	63	34	20.5	4.7	4.5
JUNE	54.7	1.82	2.1	55	44	22	6.0	81	64	21	9.3	3.3	3.2
JULY	58.2	1.87	3.0	67	58	13	5.2	104	57	45	27.3	5.8	4.4
AUG	55.6	1.79	2.0	67	52	22	8.3	109	63	42	25.6	3.1	3.3
SEPT	45.2	1.51	1.9	76	51	33	11.3	171	77	55	42.5		
OCT	49.6	1.60	1.9	77	53	31	11.9	180	89	51	45.1	5.0	4.2
NOV	53.3	1.77	2.3	76	50	34	13.8	126	56	56	37.3	6.4	4.0
DEC	51.6	1.66	2.2	68	50	26	9.1	105	57	46	24.3	4.8	4.9
TOTAL	657.1	-	-	-	-	-	148.0	-	-	-	355.1	-	-
AVG.		1.8	3.4	75	52	31	12.3	117	61	48	29.6	4.6	3.9
No. of Samples	-	-	-	57	57	-	-	59	59	-	-	11	11

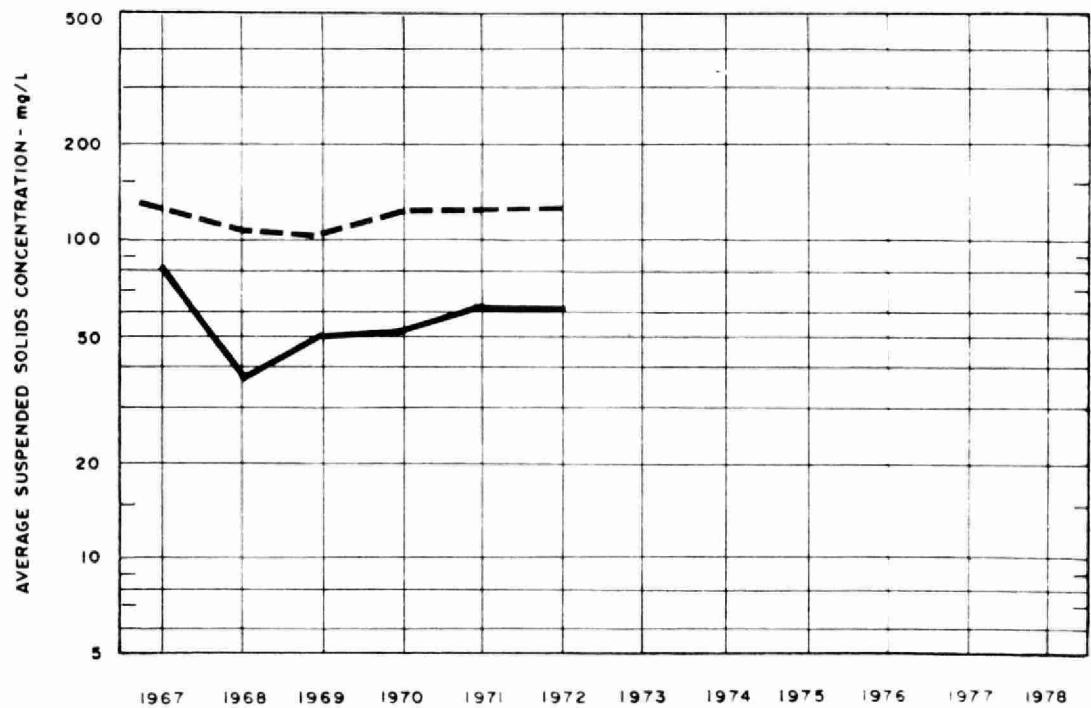
# BIOCHEMICAL OXYGEN DEMAND



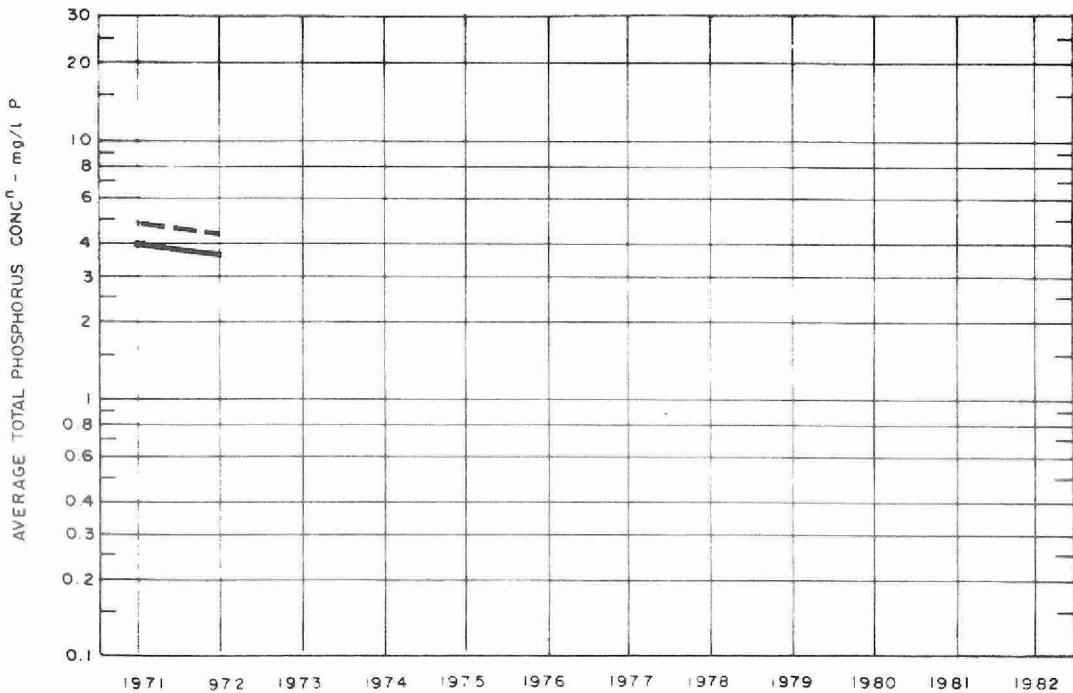
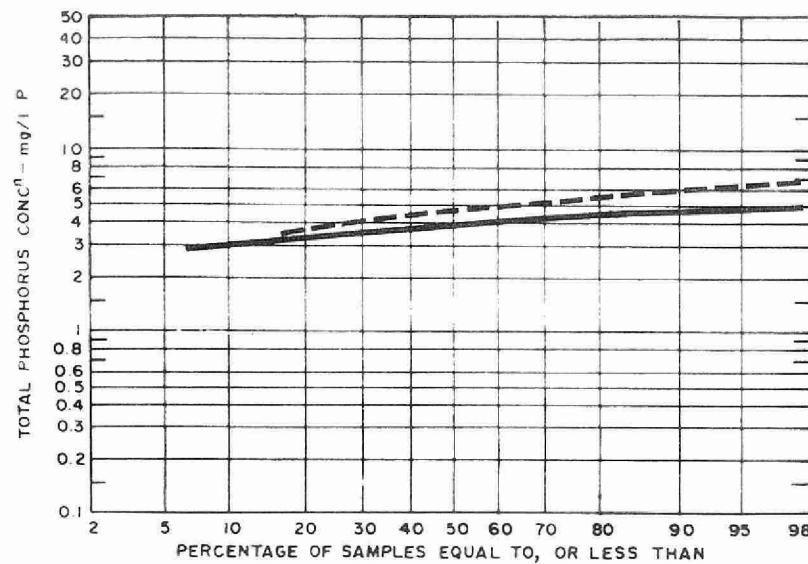
# SUSPENDED SOLIDS



PLANT INFLUENT      -----  
PLANT EFFLUENT      —————

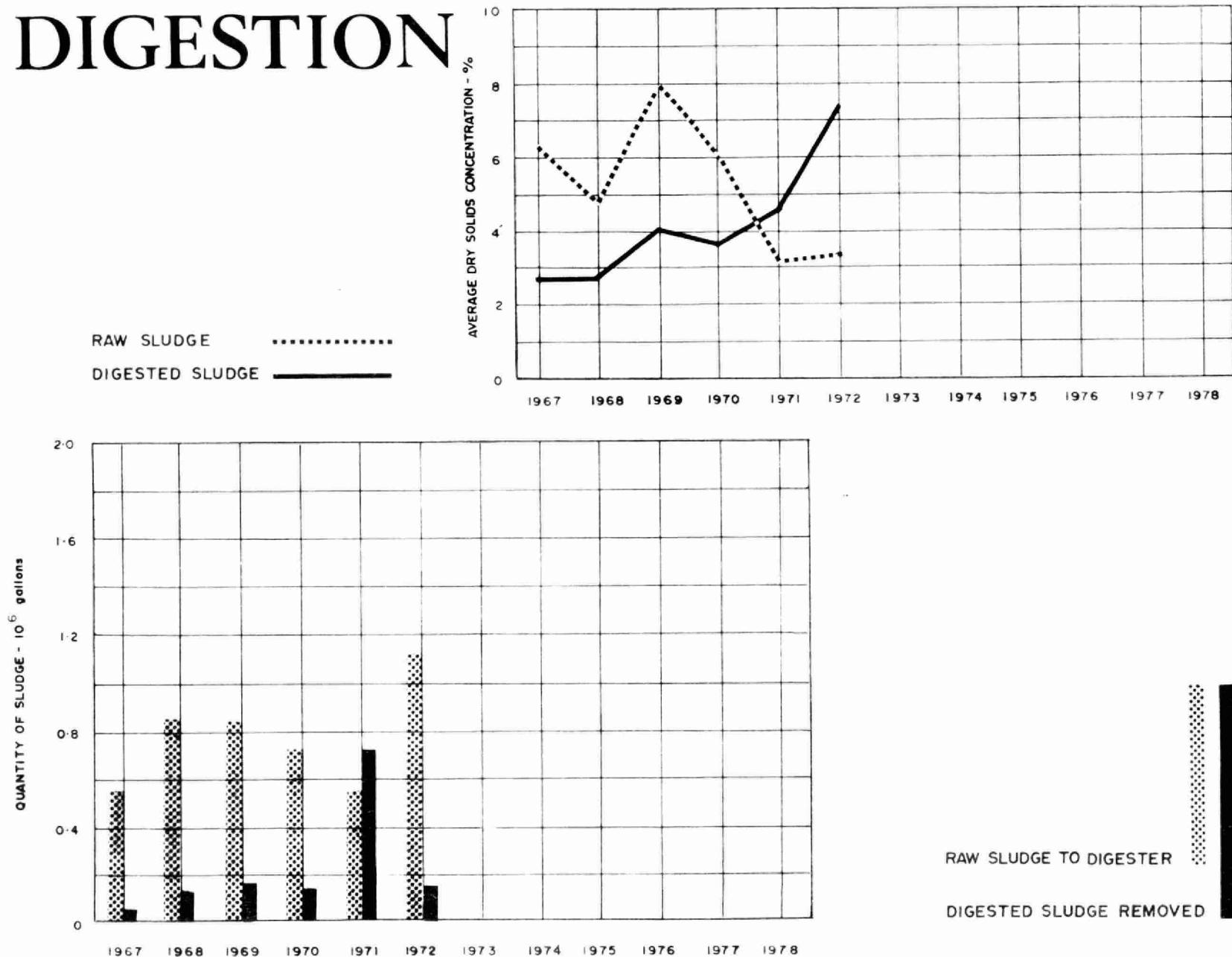


# PHOSPHORUS



PLANT INFLUENT ——————  
PLANT EFFLUENT ——————

# DIGESTION



## TREATMENT DATA

MONTH	GRIT	CHLORINATION		SLUDGE DIGESTION and DISPOSAL							
				RAW SLUDGE			DIGESTED SLUDGE			SUPERNATANT	
		QUANTITY cubic feet	CHLORINE USED $10^3$ pounds	AVERAGE DOSAGE mg/l	QUANTITY $10^3$ gallons	TOTAL SOLIDS %	VOLATILE SOLIDS %	QUANTITY REMOVED $10^3$ gallons	TOTAL SOLIDS %	VOLATILE SOLIDS %	TOTAL SOLIDS %
JAN	11	2.00	4.1	62.0	2.5	70	12.0	8.5	34	.1	72
FEB	3	1.62	3.6	56.4	2.0	71	13.0	6.2	51	.3	78
MAR	11	1.84	3.4	70.2	2.4	68	14.0	5.6	51	.1	84
APR	83	1.60	2.1	90.3	3.7	44	11.0	8.2	43	.1	66
MAY	13	1.92	3.0	96.2	3.0	54	9.0	8.0	43	.1	54
JUNE	44	1.94	3.5	103.7	4.0	56	13.0	9.0	41	.1	78
JULY	22	2.06	3.5	107.2	3.4	56	16.0	8.2	43	.5	96
AUG	29	2.24	4.0	107.1	5.3	52	20.0	8.7	40	.1	120
SEPT	40	2.37	5.2	103.7	2.4	63	10.0	8.2	36	.1	60
OCT	23	2.25	4.5	100.5	4.6	50	5.0	6.6	42	.3	30
NOV	27	1.64	3.1	116.9	3.5	57	18.0	7.2	45	.1	108
DEC	13	2.00	3.9	107.1	2.7	64	5.0	3.6	52	.1	30
TOTAL	319	23.48	-	1121.5	-	-	146.0	-	-	-	876
AVG	0.5 cubic feet/mil gal	1.96	3.6	93.5	3.3	59	12.2	7.3	43	.2	73

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